

1       **51013/JWP/M844**

WHAT IS CLAIMED IS:

5           1.    A nerve root retractor and sucker comprising:  
          a handle having proximal and distal ends,  
          a nerve root retractor/sucker shaft having proximal and  
distal open ends and defining a central passage therebetween,  
wherein the proximal end of the shaft is connected to the  
10       distal end of the handle, and wherein the axis along the  
distal end of the shaft forms an angle of less than 180  
degrees with the axis of the handle;

          a suction source in fluid communication with the distal  
opening of the shaft, wherein one or both of the handle and  
15       shaft define a suction fluid path between the suction source  
and the distal opening;

          at least one suction control vent disposed along the  
suction fluid path such that closing the at least one vent  
increases the level of suction at the distal opening, and such  
20       that opening the at least one vent decreases the level of  
suction at the distal opening; and

          a retractor blade disposed at the distal end of the  
shaft.

25           2.    The nerve root retractor and sucker described in  
claim 1, wherein the shaft is detachable connected to the  
handle.

          3.    The nerve root retractor and sucker described in  
30       claim 1, wherein the handle has distal and proximal openings  
and defines a hollow passage therebetween, and wherein the  
proximal opening is in fluid communication with the suction  
source and the distal opening is in fluid communication with  
the proximal opening of the shaft.

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4.    The nerve root retractor and sucker described in  
claim 3, wherein the at least one suction control vent is  
5 disposed on the handle.

5.    The nerve root retractor and sucker described in  
claim 1, having at least two suction control vents.

10       6.    The nerve root retractor and sucker described in  
claim 5, wherein the at least two suction control vents have  
different diameters.

15       7.    The nerve root retractor and sucker described in  
claim 1, wherein the shaft is made of a material selected from  
the group consisting of stainless steel, plastic, and  
titanium.

20       8.    The nerve root retractor and sucker described in  
claim 1, wherein the shaft is made of a material that is  
malleable at room temperature.

25       9.    The nerve root retractor and sucker described in  
claim 1, wherein the shaft has a length between about 80 and  
about 220mm.

30       10.   The nerve root retractor and sucker described in  
claim 1, wherein the retractor blade has a width of about 5 to  
about 10mm.

35       11.   The nerve root retractor and sucker described in  
claim 1, wherein the distal end of the shaft forms about a 135  
degree angle with the handle.

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12. The nerve root retractor and sucker described in claim 1, wherein the handle includes a non-grip surface.

5       13. The nerve root retractor and sucker described in claim 1, wherein the retractor blade is detachably connected to the shaft.

10       14. The nerve root retractor and sucker described in claim 1, wherein the retractor blade is made of a malleable material.

15       15. The nerve root retractor and sucker described in claim 1, wherein at least one of the length and width of the retractor blade is variable.

20       16. The nerve root retractor and sucker described in claim 1, wherein the angle of the retractor blade to the distal end of the shaft is variable.

17. A nerve root retractor and sucker comprising:  
a handle having proximal and distal ends,  
a nerve root retractor/sucker shaft having proximal and distal open ends and defining a central passage therebetween,  
25 wherein the proximal end of the shaft is connected to the distal end of the handle, and wherein the angle between the shaft and the handle of the axis may be varied along at least one axis;

30       a suction source in fluid communication with the distal opening of the shaft, wherein one or both of the handle and shaft define a suction fluid path between the suction source and the distal opening;

35       at least one suction control vent disposed along the suction fluid path such that closing the at least one vent

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increases the level of suction at the distal opening, and such  
that opening the at least one vent decreases the level of  
5 suction at the distal opening; and

a retractor blade disposed at the distal end of the  
shaft.

18. The nerve root retractor and sucker described in  
10 claim 17, wherein the angle of the shaft to the handle may be  
varied polyaxially.

19. The nerve root retractor and sucker described in  
claim 17, wherein the angle of the shaft may be varied in at  
15 least a 60 degree arc.

20. The nerve root retractor and sucker described in  
claim 17, wherein the shaft is connected to the handle in a  
ball and socket arrangement.

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21. The nerve root retractor and sucker described in  
claim 17, wherein the connection between the shaft and handle  
forms an airtight connection.

22. The nerve root retractor and sucker described in  
25 claim 17, wherein the shaft is detachable connected to the  
handle.

23. The nerve root retractor and sucker described in  
30 claim 17, wherein the handle has distal and proximal openings  
and defines a hollow passage therebetween, and wherein the  
proximal opening is in fluid communication with the suction  
source and the distal opening is in fluid communication with  
the proximal opening of the shaft.

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24. The nerve root retractor and sucker described in  
claim 23, wherein the at least one suction control vent is  
5 disposed on the handle.

25. The nerve root retractor and sucker described in  
claim 17, having at least two suction control vents.

10       26. The nerve root retractor and sucker described in  
claim 25, wherein the at least two suction control vents have  
different diameters.

27. The nerve root retractor and sucker described in  
15 claim 17, wherein the shaft is made of a material selected  
from the group consisting of stainless steel, plastic, and  
titanium.

28. The nerve root retractor and sucker described in  
20 claim 17, wherein the shaft is made of a material that is  
malleable at room temperature.

29. The nerve root retractor and sucker described in  
claim 17, wherein the shaft has a length between about 80 and  
25 about 220mm.

30. The nerve root retractor and sucker described in  
claim 17, wherein the retractor blade has a width of about 5  
to about 10mm.

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31. The nerve root retractor and sucker described in  
claim 17, wherein the distal end of the shaft forms about a  
135 degree angle with the proximal end of the shaft.

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32. The nerve root retractor and sucker described in claim 17, wherein the handle includes a non-grip surface.

5        33. The nerve root retractor and sucker described in claim 17, wherein the retractor blade is detachably connected to the shaft.

10       34. The nerve root retractor and sucker described in claim 17, wherein the retractor blade is made of a malleable material.

15       35. The nerve root retractor and sucker described in claim 17, wherein at least one of the length and width of the retractor blade is variable.

20       36. A nerve root retractor and sucker system comprising:  
a handle having proximal and distal ends,  
a plurality of nerve root retractor/sucker shafts having proximal and distal open ends and defining a central passage therebetween, wherein the proximal end of each shaft may be detachably connected to the distal end of the handle, and wherein the axis along the distal end of each of the shafts forms an angle of less than 180 degrees with the axis of the handle and has a length of between about 80 and 220mm;

25       a suction source in fluid communication with the distal opening of the attached shaft, wherein one or both of the handle and shaft define a suction fluid path between the suction source and the distal opening;

30       at least one suction control vent disposed along the suction fluid path such that closing the at least one vent increases the level of suction at the distal opening, and such that opening the at least one vent decreases the level of suction at the distal opening; and  
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          a retractor blade disposed at the distal end of each of  
the plurality of shafts,

5        wherein at least one of the angle and length of at least  
two of the plurality of shafts are different.

          37. The nerve root retractor and sucker described in  
claim 36, wherein at least one of the length and width of the  
10        retractor blade of at least two of the plurality of shafts are  
different.

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